

DOCUMENT RESUME

ED 358 288

CE 063 813

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TITLE Integrating Academic and Vocational Education: Best Practices in Florida. Third in a Series.
INSTITUTION University of West Florida, Pensacola.
SPONS AGENCY Florida State Dept. of Education, Tallahassee. Div. of Vocational, Adult, and Community Education.
PUB DATE 92
NOTE 61p.; For related documents, see CE 063 811-814.
AVAILABLE FROM Division of Vocational, Adult, and Community Education, Bureau of Career Development and Educational Improvement, Florida Education Center, Tallahassee, FL 32399-0400 (order no. GE 305 BK 92).
PUB TYPE Guides - Non-Classroom Use (055)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Academic Education; *Administrator Role; Articulation (Education); Change Strategies; Cooperative Planning; Coordination; Educational Cooperation; *Educational Practices; Elementary Secondary Education; Guidance Programs; Guidelines; Instructional Materials; Integrated Activities; *Integrated Curriculum; Interdisciplinary Approach; Models; Postsecondary Education; Program Implementation; Services; Statewide Planning; *Teacher Role; Team Teaching; *Vocational Education
IDENTIFIERS *Florida

ABSTRACT

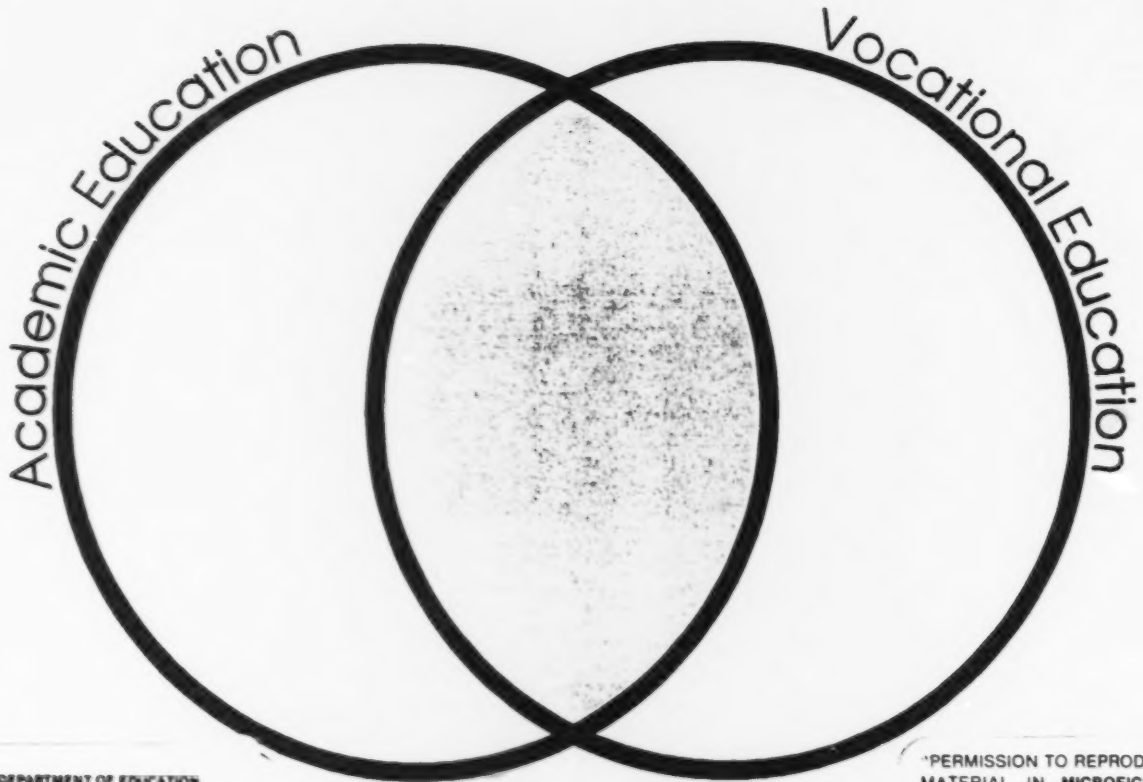
This guide is designed to provide information about successful administrative and instructional practices and the models used to integrate academic and vocational education in Florida schools. It is divided into seven chapters, including a summary and conclusions section. The first chapter discusses various Florida initiatives. Outlined next are general models for integration in elementary, middle, and secondary schools and in vocational centers. Chapter 3 discusses administrative practices at the elementary, middle school, and secondary levels and at vocational centers, and Chapter 4 discusses instructional practices at the same levels. Chapter 5 discusses instructional materials in elementary schools and instructional materials in middle, secondary, and postsecondary schools. Guidance and support services in elementary, middle, and secondary and postsecondary schools are examined in Chapter 6. (Contains eight references.) (MN)

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Integrating Academic and Vocational Education Best Practices in Florida

Third In A Series



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**Integrating Academic and Vocational Education
Best Practices in Florida
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**Florida Department of Education
Division of Vocational, Adult and Community Education**

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Preface

This document is one in a series of related documents on integrating academic and vocational education:

Integrating Academic and Vocational Education -A Literature Review

Integrating Academic and Vocational Education -An Implementation Guide

Integrating Academic and Vocational Education -Best Practices in Florida

Integrating Academic and Vocational Education -Changes in Teacher Education

These documents and two, intensive week long integration institutes were part of a project funded in 1992 by the Division of Vocational, Adult and Community Education through the University of South Florida, The University of West Florida, and The University of Central Florida.

Integrating Academic and Vocational Education: Best Practices in Florida is the result of cooperative efforts by teacher educators at The University of Central Florida, The University of West Florida, and The University of South Florida. It is designed to provide information about successful administrative and instructional practices and the models used to integrate academic and vocational education in Florida schools.

We visited elementary schools, middle schools, high schools and vocational-technical centers in various parts of the state. Due to the time constraints imposed upon this project, however, we were unable to visit each school site that has been involved in the academic/vocational education integration effort. This document is a summary of the findings from site visits, telephone interviews, and a review of related literature. We have described practices employed in Florida schools that the practitioners feel have been critical to the successful integration of academic and vocational education in their schools. It should be noted here that the practices described herein do not make up an all inclusive list. Many other schools in the state have had similar successes and have employed many of the same and other equally innovative practices. We apologize for not being able to highlight each school and their efforts.

We would like to express our gratitude to the following individuals who contributed time, effort, and information to this project. By describing the best and most exciting practices relating to integration taking place at their schools, they are sharing with the rest of us.

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Integrating Academic and Vocational Education

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Special thanks are given to Dr. Wally Holmes, The University of West Florida,
and Dr. Bill Blank, The University of South Florida, for their contributions to the
development of this document.

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Florida Initiatives

Florida Initiatives

Change is taking place in Florida's schools. The 1990 Carl D. Perkins Vocational and Applied Technology Education Act Amendments tie federal funding to efforts that integrate academic and vocational education. As the effect of this mandate ripples across America, Florida is caught in the wave of change. Several initiatives have been established in Florida which facilitate and encourage the integration of academic and vocational education. One of these is the *Blueprint for Career Preparation*. Initiated in 1987, Florida's *Blueprint for Career Preparation* states as its vision that:

Students graduating from Florida's public schools shall be prepared to begin a career and continue their education at a postsecondary technical school, community college or university. (Florida Department of Education, 1991a, p.3)

To achieve this vision, the *Blueprint* is designed to:

- address the increasing gap between emerging job requirements and the ability of Florida's workforce to meet them;
- prepare students for the world of work in a competitive global marketplace that is changing every day; and
- enable all high school graduates to get a job.

Florida's *Blueprint for Career Preparation* establishes six steps to be implemented:

1. Self and career awareness (grades K-5) - provides students with an instructional program that infuses self, career, and technology awareness activities into the curriculum.
2. Personal assessment and technological literacy (grade 6) - provides students with a program of personal assessment and technological literacy instruction.
3. Career orientation and exploration (grades 7-8) - exposes students to a variety of experiences related to careers to help them begin to identify their own career goals and develop a four-year program of study for their high school coursework.

4. Academic and specialized skill development (grades 9-12) - provides high school graduates with adequate preparation for pursuing postsecondary education and entering the work force or the armed services by strengthening basic skills through applied learning.
5. Skill development and career advancement (postsecondary education) - ensures that students have the opportunity to participate in postsecondary education programs which enable them to successfully enter the world of work, maintain competence in their current employment, advance within their occupational field or change occupations.
6. Partnership building and information sharing (K-community) - encourages all levels of education to share information with the intent of involving parents, business/industry and the community in the process of educating students.

In addition to obtaining support for the *Blueprint for Career Preparation* (which deals specifically with integration), Florida's Department of Education also established a variety of other initiatives which interrelate with integrating academic and vocational education. The *School Improvement Program* (Florida Commission on Education Reform and Accountability, 1992) identified seven goals that focus school improvement on student performance. The goals are:

1. readiness to start school;
2. graduation rate and readiness for postsecondary education and employment;
3. student performance;
4. learning environment;
5. school safety and environment;
6. teachers and staff; and
7. adult literacy.

A monograph entitled "*Creating School's For Florida's Future: The Relationship Between The Blueprint For Career Preparation And The School Improvement Program*" prepared by the Florida Department of Education states, "Goal two, which states that all students will graduate and be prepared to enter the workforce and postsecondary education, is the goal addressed by the Department of

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Education's pilot program, the *Blueprint for Career Preparation*" (Florida Department of Education, n.d., p. 1). However, the goals of the *Blueprint for Career Preparation* are related to several of the School Improvement Program's goals including student performance, student learning environment, and adult literacy.

The Florida Commission on Education Reform and Accountability, established to recommend guidelines for the School Improvement Program, states as its mission:

...to guide and oversee the implementation of a system of school improvement and accountability which will result in educational excellence and the highest level of student learning, and, thereby the opportunity for every Florida student to be successful in a global economy and changing social structure, and be a contributing citizen in our democracy. (Florida Commission on Education Reform and Accountability, 1992, p.13).

Florida's *Gold Seal Scholarship Program* was established to recognize outstanding high school students enrolled in a career preparation program. Requiring an overall 3.0 G.P.A. and a 3.5 G.P.A. in the vocational program, the Gold Seal Program provides a scholarship of up to \$2,000 per year at a vocational center, community college, university or qualified private institution and is the first scholarship specifically designated for vocational education students.

Florida's *Technology Education Program* (Florida Department of Education, 1991b) has as its goals:

- Technology and career awareness (grades K-5)
 - reinforce and enrich the application of elementary school curriculum to technology,
 - provide opportunities for students to develop an awareness of technology as a significant force in work and life,
 - provide an opportunity for students to develop problem-solving, and decision making skills through working safely with tools, materials, technological concepts and processes.
- Technology orientation and exploration (grades 6-8)

- safely use technological tools, materials and processes,
 - identify occupational fields and educational programs in technological fields,
 - research, plan, design, construct and evaluate problems and projects common to technological career fields,
 - experience the practical application of basic scientific and mathematical principles.
- Technology Applications (grades 9-12)
- make informed decisions in regard to educational and career goals,
 - gain an in-depth understanding and appreciation for technology in our society and culture,
 - solve business and life problems with the use of technological tools, materials, processes and products.

Florida's *Tech Prep Program* states as its goal to "prepare students for technology based careers of the 21st century" by providing students with:

- rigorous curriculum in math and science;
- specialized technical training in high demand, value-added occupations;
- programs formed via articulation agreements between high schools and vo-tech centers or community colleges;
- programs that result in a two year certificate or degree.

Florida's *Vocational Reference Committee* drafted a position paper in October 1991 relative to quality vocational programming in which it stated as one of its goals "to provide instruction that will prepare students to become self-sufficient, contributing members of society." To facilitate this goal, the committee recommended that vocational education be restructured to include:

1. clearly identified programs designed to prepare students for occupations that constitute career ladders including all of the academic and vocational courses necessary to ensure that students are adequately prepared for both work and further learning;

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2. structured programs to provide specialized areas of occupational instruction that are built upon the "core" content for the areas;
3. programs offered in the competency-based mode and true open-entry, open-exit programs;
4. the establishment of applied academic courses and lead in the development of new courses that combine technical and academic competencies;
5. academic education relevant to students through application in the vocational programs;
6. accountability for student outcomes as measured by student performance.

As did the Vocational Reference Committee, the Division of Vocational, Adult and Community Education (DVACE) also developed a draft concept/position paper for *Restructuring Vocational Education in Florida* (Florida Department of Education, 1991c). The proposed restructuring was based in the belief that all students must:

- acquire a rigorous education in every sense. Good vocational education includes the foundations skills drawn from mathematics, science, and communications along with transferable practical arts skills that underlie a number of technical and occupational areas;
- develop employability skills and an awareness of entrepreneurship, and receive opportunities to practice teamwork, critical thinking, decision making, problem solving, and leadership skills;
- be provided specialized areas of occupational skill instruction that are built upon the "core" content;
- receive instruction that is competency-based, learner outcome focused, flexible in design, and adaptable to fit the abilities of a diverse population;
- have access to those programs and services necessary to make the transition from high school to postsecondary education and/or enter the workforce.

Florida also participated in the *Southern Regional Education Board (SREB) Model School Program* (Thomas, 1991). The goal of the SREB Model School program is "to raise significantly the basic competency -- mathematics, science, and communications -- of students pursuing vocational studies." To reach this goal, the SREB Model School Program established the following list of essential practices:

- establishing higher expectations of students in both academic and vocational classes;
- revising vocational classes and developing new ones to expand significantly the emphasis on advancing the communications, mathematics, and science competencies of students;
- revising academic courses or developing new ones to teach the essential concepts from the college preparatory curriculum through a functional and applied process that enables students to see how course content is related to future roles that they may envision for themselves;
- requiring general and vocational students to complete a structured and coherent program of study in which they complete three courses in mathematics and science each, with at least two credits in each area being equivalent in content to courses offered in the college preparatory program; and complete at least four courses in a vocational major and two courses in related areas;
- encouraging vocational and academic teachers to integrate academic and vocational curriculum and instruction by providing them with staff development, materials, and time to work together;
- revising the instructional process so that the student is a worker and is actively engaged in the learning process;
- providing guidance and counseling services that help students see the connection between what they are learning in school and their goals beyond high school and involving their parents in the process of planning and annually updating a high school program of study;
- providing extra help that will enable students to complete successfully a program of study that includes higher level academic content; and

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- participating in and using student assessment and program evaluation information to check and improve the curriculum, instruction, school climate, and school organization and management.

With all of these major state initiatives that facilitate and encourage integration, one might expect a massive, uniform shift in Florida schools away from the dual academic versus vocational system and toward a unified, integrated academic/vocational system. But change occurs slowly and at different speeds in different areas and under different circumstances.

The purpose of this document is to provide an overview of the different ways the change toward integration of academic and vocational education is occurring in Florida and the best and most successful practices relative to integration.

General Models for Integration

Elementary Schools

Middle Schools

Secondary Schools

Vocational Centers

General Models for Integration

Public schools in Florida are using many different models for integrating academic and vocational education. Several major application models of academic and vocational education integration have been identified in the literature (Grubb, et al., 1991):

- Incorporating more academic competencies (including basic skills) into vocational courses.
- Combining academic and vocational teachers into a "team" to enhance academic content in vocational programs.
- Making academic courses more applied or vocationally relevant, i.e. "applied academics", materials science, and other interdisciplinary materials.
- Curriculum alignment: modifying both academic and vocational courses through both horizontal (coordinating) alignment of courses and vertical (sequencing) alignment of courses.
- The academy model--Schools-within-a-school.
- Occupational cluster departments in place of conventional departments.
- Occupational high schools and magnet schools.
- Career paths or occupational majors.

Elementary Schools

Efforts to integrate academic and vocational education at the elementary level almost completely rely on model #3--making academic courses more applied or vocationally relevant. This model is being applied at many elementary schools, both Blueprint pilot schools and schools that are not part of the Blueprint effort. More of an instructional practice than a true conceptual model, no evidence was found that actual vocational content is included at the elementary level. Instead,

it consists of more "hands-on" kinds of activities and practical/play activities that are more appropriate to elementary level students.

For example, at Altamonte Elementary in Altamonte Springs, math and science lessons are being taught in conjunction with a cooking lab whereby students actually cook while learning basic math and science principles but food preparation careers are not emphasized or studied. And in language arts, lessons are taught in conjunction with the use of computers by having the students in all grade levels publish anthologies. Both of the above are examples of how vocational skills are being used as a **process** to teach academic and basic skills content.

Weaving applied practices into academic content requires teachers who have extensive training, resources and commitment because it requires more planning and organization than traditional lesson planning. Altamonte Elementary formed teaching teams by grade level so teachers can exchange ideas and share resources. This concept of forming "teams" is an excellent practice when teachers are not comfortable leading applied activities. Altamonte Elementary also assigned one fifth grade teacher to specialize in science. This teacher is responsible for teaching all fifth graders science by using applied techniques. Since this teacher is the only teacher responsible for teaching science, this teacher can concentrate more energy in creating exciting, applied science lessons.

Most elementary schools are also introducing career awareness activities across and throughout grade levels. One way that elementary schools are tackling career awareness is by having some sort of career awareness day. These days often consist of bringing in parents and community members from different professions to share with students the characteristics of their occupations. But many schools do not go any further. At Dream Lake Elementary in Apopka, associations are made between the occupations and academic curricula. The parent and community visitors are asked to discuss during their occupational presentations how they use math, science, English and other academic content in their work. Using career awareness days and occupational visitors as a launching point for discussion on the uses of academic content and skills is an excellent elementary level practice for integrating academic and vocational education.

In addition to practical instruction and career awareness, the elementary schools also seem to be entering the technology arena. Many elementary schools have developed technology plans and have already introduced computer labs into the physical setting. But little evidence was found that the use of technology is

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interwoven with career information. A good practice would be to introduce information on careers in technology while using the technology to teach academic content.

Again, the integration model found at the elementary school was model #3, making academic content more applied by using applied instructional techniques.

Middle Schools

Several different models for integration have been found at the middle and junior high schools. The middle and junior high schools are incorporating more academic competencies into vocational courses (model #1), combining academic and vocational teachers into "teams" to enhance academic content in vocational programs (model #2), and making academic courses more applied or vocationally relevant--offering applied courses (model #3). These models are being used in various ways.

Middle and junior high schools seem to have the best and most comprehensive academic and vocational education integration efforts. This is because of the physical design, philosophical goals and concepts, and the attitudes already in place at the middle schools and junior high schools. For example, many middle schools and junior high schools have mission statements that include career planning and exploration. Because of the emphasis on career exploration, middle and junior high schools often have:

- grade level cross-curricular teaching teams already established;
- an extensive number of applied/technology education courses already in place;
- established career awareness and exploration programs; and
- tools, labs, curriculum materials, and resources to facilitate applied learning and academic and vocational education integration activities.

At Milwee Middle School in Longwood, students are exposed to career clusters consisting of courses that integrate academic and vocational education. Students can take applied academic courses that emphasize how the academic skills are used in the workplace (for example--Technology Education [previously Industrial

Arts] courses). This is model #3. They can take vocational courses that are linked to academic courses by teachers across all disciplines who work closely together (model #1 and #2). Finally, all students participate in career planning and assessment. The seventh grade exploratory wheel includes a career awareness class. Eighth graders are assessed for interest and aptitude through a Mobile Career Assessment Unit. And all students are exposed to CHOICE Carrels (an instructional system that concentrates on hands-on individualized career exploration). By intermingling career exploration activities, integrated academic and vocational courses, and occupational cluster programs, Milwee Middle School provides a totally integrated and career oriented program of study for its students.

At Merritt Brown Middle School in Panama City, the general model used is model #2--forming interdisciplinary teams. Each grade level has a team consisting of a vocational teacher, an English teacher, a math teacher, a history or geography teacher, a science teacher, a P.E. teacher, and an elective teacher. Additionally, the whole school is involved in "Project Learning Tree", a business partnership between Stone Containers and Merritt Brown.

Like Merritt Brown, A.D. Harris Middle School also formed teams of teachers. The teams consist of seven teachers working cooperatively with work experience teachers. Approximately 57 students are in the integrated program and are involved in public and private jobs and vocational training.

The multiple model approach applied in the middle and junior high schools is a good integration practice that serves the needs of students at various levels and with various needs.

Secondary Schools

Public high schools in Florida have the potential for integrating and need to do the most to integrate academic and vocational education. The traditional dual-track system of providing a purely "academic" education for some students and a "vocational" education for others is most prevalent in the high schools. As change slowly takes place in the high schools, almost every model for integrating academic and vocational education can be found. Some are doing more than others. Some are implementing more than one model at a time. And they all are implementing them to various degrees.

The initial four pilot schools for the Blueprint program (Palm Beach Gardens High School, Leto Senior High School, Lake Gibson High School, and Apopka High

School) all took different approaches to integration, though there were some similarities between them. First, all four of the initial pilot schools were also SREB model schools. The SREB mission is to strengthen the basic competencies in mathematics, science, and communications skills of vocational program completers. To accomplish this, SREB pilot sites have used several different strategies including eliminating the "general education courses" and using applied teaching strategies in academic courses. Many pilot sites have elected to use applied academic courses such as Applied Communications, Applied Mathematics, Principles of Technology, and Practical Applied Technology to help them accomplish the SREB mission.

The implementation of these courses in the SREB model schools represented model #3--making academic courses more applied or vocationally relevant. These courses replaced the "general track" courses such as "Basic or General Math".

The SREB model school sites and many of the Blueprint sites implemented integration differently. At Palm Beach Gardens High School, a "whole school" approach was taken and every student was included. By eliminating the general track academic courses and offering applied academic courses, the SREB program at Palm Beach Gardens High School was able to reach "regular" students as well as the vocational education students for whom the SREB program was designed. While only students registered for "general track" courses participated in the SREB applied courses, the whole school participated in other integrated activities. For example, cross-disciplinary teams of teachers were formed and labeled "focus groups". Each focus group planned, implemented and disseminated information on an innovative career program or integration instructional practice.

At Apopka High School in Apopka, four grade level teams of academic and vocational teachers were formed. In the 9th grade, a team is composed of approximately 50 business students who all have the same English and Science teacher. The teachers plan together, follow common rules, and work on related projects in the classrooms (models #2, #6, and #8). In the 10th, 11th, and 12th grades, the teacher teams consist of an English, science, social studies, mathematics, and two vocational teachers. While the vocational teachers do not teach all of the students in the team, they work on projects with one or all of the academic teachers. Apopka High School is also working towards an academy model and beginning with the 1993-94 school year, will introduce a health academy and possibly a business academy (model #5).

At Lyman High School in Seminole County, an integrated four-year career education plan is developed for each student based upon interest surveys and career data obtained during the middle school program (model #8). The student then selects courses indicated in the four-year plan and are exposed to a variety of integrated courses formed by teams of academic and vocational teachers (model #2). The curriculum is aligned both horizontally (across grade levels) and vertically (across courses) (model #4).

At several high schools (Osceola High School, Hillsborough High School, Pensacola High School, Woodham High School, and Vernon High School), efforts are being made to introduce both applied academic courses (model #3) and integrated teams of teachers who teach academic and vocational content that easily "complement" each other (model #2). The efforts are good practices for beginning integration but larger efforts need to be made to expose all students in every school to an integrated curriculum. Simply replacing the general track in high schools with an integrated curriculum and leaving the academic and vocational tracks as they are is not enough. The major problem with only replacing the general track (as the SREB model seeks to do) is that the students who are enrolled in the integrated track end up getting "stigmatized" as they are being exposed to specialized curriculum not provided for the other students. If the point of integration is to eliminate all tracking and to provide all students with an integrated curriculum, then all students need to be exposed to **one** integrated curriculum. Research has indicated that **all** students benefit from integrated curriculum. At Palm Beach Gardens High School, while only the "general track" students are actually enrolled in the applied academic courses, all students participate in the focus groups and the atmosphere of the school is one where the feeling is that all students are involved in the exciting new educational process. The school is brimming with excitement and newness.

At Rutherford High School in Springfield, the academy model (model #5) is being used. Rutherford has established business, marketing, aviation, T.V. production, computer science, journalism, drafting, and technical studies academies. Rutherford has also established an articulation agreement with area community colleges where students dual enroll in selected business and marketing careers.

Marianna High School in Marianna is taking a multi-model approach. They have several applied academic courses in place (applied math, applied communication, etc.). Every 9th grade student is exposed to 6-9 weeks of keyboarding technology. There is dual enrollment for health occupations students at Chipola Junior College

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and students in the Criminal Justice Assisting Program are on a double block schedule. Marianna has tackled integration using a variety of methods.

The best model for integrating academic and vocational education is one that exposes all students to more applied or vocationally relevant courses (model #3); exposes all students to vocational courses that incorporate more academic competencies (model #1); combines all academic and vocational teachers into "teams" (model #2) based upon occupational clusters (model #6); places all students into occupational majors (model #8) regardless of whether or not the occupation requires postsecondary education; offers students occupational academies (model #5); and aligns curriculum both across grade levels and courses (model #4).

Creating magnet schools is one model that will reach all students in the school (model #7). Currently plans are being made to establish a health magnet in Seminole County at Seminole High School, Tampa Bay Technical High School, and other districts are also working on planning magnet schools.

Vocational Centers

Florida's Post Secondary Vocational Centers are also moving towards an integrated curriculum. At Haney VoTech in Panama City, academic and vocational education has been infused into the varying exceptionalities curriculum. There is collaboration between academic and vocational instructors in curriculum and development, especially in the area of testing and assessment.

Washington Holmes Area VoTech Center (WHAUTC) in Chipley, is a leading vocational center with many innovative practices in integrating academic and vocational education. In addition to being involved in Tech Prep and the Blueprint program, WHAUTC has had an articulation agreement with community colleges for over 24 years. And these agreements cover almost every occupational program. WHAUTC has a reputation for quality and has received for over 20 years, the opportunity to participate in almost every pilot educational program.

The computer programming program at WHAUTC consists of a 1080 hour (two year) training program that leads to a high school diploma and a certificate. Employability skills are included in the program. There is team teaching between the typing, word processing, bank and finance, and accounting instructors.

Additional academic instructors are teamed when specific remediation or assistance is needed.

Teaming is a big part of WHAVTC but it is not limited to within the school. For example, the drafting and carpentry instructors at WHAVTC teamed with the 8th graders at Vernon Middle School for two weeks to teach math applications in two fields. Another teaming example at WHAVTC included teaming the drafting teachers with the entire 8th grade math faculty at Vernon Middle School to expose them to the computer CAD/CAM system. And still other WHAVTC instructors are working at the elementary level to expose all students in grades K-5 to vocational education.

WHAVTC is a wonderful example of integration occurring in several directions--across disciplines and across grade levels (and even across schools)! It is often hard enough to get the academic and vocational instructors within a school to work together but to get the academic instructors and vocational instructors at different schools and different levels to work together is a tribute to WHAVTC's commitment to integration.

Administrative Practices

Elementary Administrative Practices

Middle School Administrative Practices

Secondary Administrative Practices

Vocational Center Administrative Practices

Administrative Practices

While there is debate as to whether or not the initiative to integrate must come from top-down or bottom-up, there is no doubt that all levels of educational administration must support the initiative if it is to be successful. With the implementation of the 1990 Carl D. Perkins Vocational Education and Applied Technology Act Amendments, there is commitment at the Federal level. But the 1990 Perkins Act is vocational education legislation. There must be some initiative or mandate that includes all education, not just vocational education.

At the state level, commitment must come in the form of dollars to support integration efforts and seed money for implementing innovative integrated programs. Teachers across all disciplines (academic and vocational) need shared planning time to coordinate integrated activities. The schools that are part of the Blueprint effort are being given just this sort of monetary support. Teacher education programs need resources to develop and implement preservice teacher education programs that focus on one integrated track rather than dual academic and vocational teacher education programs. Universities also need support to disseminate integration information in the form of teacher workshops and inservice training programs for teachers already in the schools. This document is the result of just such a state supported effort undertaken by three of the state's universities.

Graduation requirements must be adjusted to allow integrated and vocational classes to fulfill graduation requirements. District level educational administration needs to support integration efforts by assisting individual schools in grant proposal writing, disseminating successful school based efforts to other schools, and channeling adequate resources to individual schools.

But more than all of the above, if integration efforts are to be successful at the institutional level, they must have the support of the school based administration. Classes must be scheduled in such a manner to allow students to take sequences of academic and vocational courses that enhance each other both across grade levels and across disciplines. Faculty need common planning times and classroom/lab space that is physically near one another. Staff members need time and resources to attend staff development workshops and inservice programs that demonstrate classroom instructional practices for integrating academic and vocational education. Staff members need resources to purchase instructional materials and stock laboratories. Each school needs to have a dedicated staff member who can troubleshoot problems, gather information on successful

integration practices, coordinate teachers and students, and organize the massive changes in curriculum and instructional practices that must take place for integration to occur. This takes the full support of the school administrator.

Elementary Administrative Practices

One of the most effective administrative practices at the elementary level for integrating academic and vocational education is to provide time and resources for elementary staff to articulate with the community and secondary institutions. At Altamonte Elementary School, a multi-school articulation plan has been established between Altamonte Elementary School, Milwee Middle School and Lyman High School. Altamonte has also established an articulation committee. Vision statements, mission statements, and strategic objectives were all coordinated and developed between the three schools. This ensures a smooth transition for the student across grade levels and helps to provide each student with a clear and articulate K-12 program of study. At each school, activities are developed that build upon foundations established at the previous school.

The commitment to integrate is evident at Altamonte Elementary School; parents and community members are involved in various ways. The PTA, Altamonte Rotary Club and all parents have viewed a videotape produced by the school to discuss the mission statement and integration/career awareness activities. Altamonte Elementary administration has provided teachers with extensive inservice in using self and career awareness materials and used extended contracts for teachers to work to develop career awareness curriculum. Teachers within grade levels are provided common planning time. Teachers are empowered by the administration. For example, teachers are involved in decisionmaking on how Blueprint dollars are spent.

At Dream Lake Elementary in Apopka, the administration has based the annual evaluation of teachers upon integration efforts. Teachers are observed by the principal based upon their training and use of computers, their use of manipulatives in math, and their efforts in teaching applied reading and writing lessons. This commitment to integration by including it in the annual evaluation is an excellent administrative practice.

Dream Lake Elementary administration has provided staff development and grade level inservice and has involved the community and parents in the inservice efforts. For example, teachers are participating in weekly computer skill

workshops that are being taught by the parents on computers purchased via the local school advisory council.

Middle School Administrative Practices

Middle and junior high school administrators are providing inservice training in integration activities, forming teaching teams to develop and implement integration activities, and structuring teacher and student schedules to allow students to take sequences of career awareness courses. At Milwee Middle School in Longwood, all teachers have been provided inservice in technology education and using applied curriculum. A committee of teachers and administrators has been formed to research Blueprint best practices and to implement Blueprint objectives. The administration has purchased CHOICE Carrels (an instructional system that concentrates on hands-on individualized career exploration) for use by the students.

"Tell me what you need; we'll get it done!" is the philosophy of the administration at Merritt Brown Middle School in Panama City. Teacher empowerment is a reality in this school. Faculty morale is high and enthusiastic. Teachers are provided common planning time and are encouraged to work together as a team. Business partnerships nurtured by the administration are used to coordinate vocations with the rest of the school.

At Merritt Brown Middle School, the faculty are assigned to interdisciplinary teams. Students are then assigned to one of these teams. The physical facility was changed to include the addition of a school forest that is used as a common thread to unite all students and faculty. For example, every student and staff member planted at least one tree. Staff development was provided and included an inservice for Project Learning Tree by Stone Container. Administrative practices that make a significant difference in the school, include the view of the interdisciplinary team as the extended family for the students assigned to the team. The team is free to work together any way they choose in the best interest of each individual child. The administration supports the efforts of the teachers and assists in removing red tape that hinders the individual student's progress or placement with a team.

Physical changes are often necessary to promote an "integrated" feeling and require administrative action. At A.D. Harris Middle and High School, all of the work experience pod (team) moved to one wing in the school with the WICAT

lab in the middle. Teachers have mutual planning opportunities. The teachers have had staff development for the group and have had counseling training. Drop out retrieval is a major function of this pod.

A.D. Harris Middle and High School administration finds ways to fund many of the projects that the teachers want to try to improve learning in the alternative setting. One way the administration is funding is to use business partners. For example, business partners support students who work in nonpaying positions or public positions. Businesses and the community are also used as mentors and resources for the school and programs.

At A.D. Harris Middle and High School, teachers involved in the Tech Prep initiative report that they meet regularly in the school and school district to network; to talk about other areas of the curriculum, job fields, and guest speakers; to set up career shadowing; to find mentors for students; and to participate in other activities. Involvement in the pod or team approach has been a morale booster for the faculty.

Holley-Navarre Middle School administration involves faculty in the decision making process. Frequent meetings with chairs of grades and disciplines are held for input on school operations. The administration is open to suggestions of new and innovative things to try. Technology has been provided in all classrooms. There are four computers in every classroom.

Secondary Administrative Practices

Administrators at Apopka High School have empowered teachers to take as much responsibility for integration as the teachers would like. At Apopka, most of the teachers participating in the integration program have volunteered. The teachers are provided common planning time and the administration is very cooperative in scheduling requests that will facilitate the implementation of a team. Staff development is provided weekly with the majority of teachers voluntarily participating during their planning period each Tuesday. Administration has also been responsive to requests for physical relocations to allow teams of teachers closer contact.

At Osceola High School, teachers are granted freedom by the administration to do as they feel best. For example, if the teachers so choose, they can pre-screen the students. Teachers are given release time to visit other school sites

Integrating Academic and Vocational Education

with successful integration programs in place and are given release time for planning. The administration provides an atmosphere that allows teachers to take risks and try new and innovative techniques without the fear of being penalized. The administration also provides assistance and support in scheduling staff assignments and scheduling classes.

At Palm Beach Gardens High School, the administration chose to spend Blueprint and SREB pilot site dollars to provide for a full-time coordinator whose job it was to develop, implement, and oversee integration activities. The coordinator was also provided travel funds to visit other successful integration sites and to gather information helpful to implementing an integration effort at Palm Beach Gardens High School. The administration is very supportive of integration activities and has demonstrated this support in numerous ways. Teachers are provided substitutes to allow them to attend training sessions. Cross-curricular planning teams of teachers (focus groups) are provided common planning time. And an actual classroom is set aside for planning and to serve as the center hub of all team activities. Staff development is provided for all teachers and district-wide staff development is provided for counselors and occupational specialists. The administration encourages risk taking behavior in teachers and is open to all innovative ideas. When budget shortfalls made it necessary to eliminate a few teaching positions, the administration made a decision that teachers who were qualified and willing to teach applied academic courses were of more value and made sure that none of those teachers' positions were eliminated.

At Lyman High School, labs and classrooms were equipped with technology and materials to facilitate teaching an integrated curriculum. Inservice training and common planning time was provided for the teachers.

At Rutherford High School, academic and vocational teachers are encouraged to team up and plan together, attend meetings together and attend conferences together. The administration has provided training on teambuilding. The Tech Prep teachers are especially open to joint planning and meeting both at the school site and districtwide. The administration at Rutherford is very enthusiastic and encouraging and has found ways to open academic and vocational integration opportunities. Opportunities for the faculty to visit other programs in various schools are provided. The interaction on these trips is a method of teambuilding and the administration has used these trips to break down barriers between academic and vocational programs. The administrators feel that the most difficult part of creating a successful integrated program is to

find the right faculty to pilot the applied curricula and to "team up". Once the program is successful, other teachers often want to join in.

At Marianna High School, the administration has established requirements that facilitate integration. For example, an interdisciplinary activity is required every grading period. Teachers are free to plan and organize the activity but one must be done. Additionally, one project is required every six week grading period in every class of the school, however, Marianna administration did not make these requirements without providing support. Administration made every effort to support the integration efforts. For example, the administration visited other schools with successful integration programs and obtained the materials and equipment to support integration efforts. And the administration made every effort to give all teachers information and a full view of all successful practices that it had knowledge of.

At Vernon High School, administrative practices include being supportive, encouraging teachers to try new things, and encouraging teachers to be risk takers. Administration has provided scheduling changes to encourage success in integration programs. For example, all classes meet in two period blocks (as in college) and they meet three times per week. Team teaching is encouraged by the administration and several teams have been formed. The trigonometry and chemistry instructors have formed a teaching team. The Applied Math and the Home Economics instructors formed a team and the project of this team was building quilts. The Science and Agriculture instructors have formed a team and joint projects are planned.

All of the administrative practices mentioned above support and facilitate integration. Most of all, the administration must not only provide resources, training, common planning time, and full-time coordinating help, but must provide an atmosphere that is supportive and conducive to risk taking behavior. Teachers must feel free to try new and innovative ideas. If the administration is not committed to being supportive and to the integration effort, once the funding ceases and dollars used as seed money are gone, then the efforts will not continue. For example, as pilot funding ceases, many administrators are finding it difficult to continue to provide a full-time dedicated faculty member to serve as a coordinator for integration activities. The coordinator at Apopka High School had to add teaching and classroom assignments to make up for the loss of funding and teachers. The coordinator at Palm Beach Gardens High School mentioned that for a school-wide integration effort to be successful, a full-time coordinator is essential.

Integrating Academic and Vocational Education

The cutbacks in state level funding has resulted in the elimination of one period (from seven to six) in some districts making planning times shorter, common planning times more difficult to schedule, and in some cases, the elimination of common planning times all together. Some of these problems are beyond the control of the administration. But some of the problems can be resolved if there is a true commitment by the administration to have the integration programs succeed.

Vocational Center Administrative Practices

The very nature of the postsecondary vocational center has facilitated wonderful administrative practices to integrate academic and vocational education. Because vocational centers are vocational by nature but offer a basic adult and high school equivalency curriculum, vocational center administrative practices often facilitate the integration of vocational and academic education. Another major difference between vocational centers and high schools is at the administrative level. Vocational center administrators are often vocational instructors who have moved into administration and are certified as vocational directors rather than principals. Therefore, vocational center administrators are often more familiar with vocational programs and can offer more support and suggestions for integration activities. There is also less hesitance to do so.

At Locklin Adult VoTech Center in Milton, the administration has provided all teachers (academic and vocational) with common planning time for over ten years. The teachers are viewed as decision makers and are included in the planning and implementing of any new strategies or changes in the school. The teachers receive 100% cooperation from administration and are encouraged to try new things. The philosophy of the administration is success is great but failure is ok too. Administration promotes the feeling that if you don't try new things, you can't be ready for the future. The administration encourages teaming. To facilitate teaming, administration provided a 20 point inservice workshop for all faculty to develop computer literacy and in this workshop, demonstrated teaming. Very little has to be spent for substitute teachers at Locklin AVTC because all teachers work together so that every teacher can attend either morning or evening training sessions.

Locklin AVTC administration provides an environment in which quality management and teacher empowerment actually happen on a regular basis. For example, Locklin has a technology committee that has control of 15% of the

school based management budget and they use it however they so choose to purchase computers, software, etc. Additionally, a large portion of the school replacement dollars went to purchase computers for the classrooms. Every teacher in the school has a minimum of at least one computer. Locklin teachers stated that they had been working together to integrate academic and vocational education for so long that they felt it was second nature for most faculty. Therefore, it was hard for them to articulate specific integration examples. While they did not see them as unusual, at Lockin there are many examples of innovative integration efforts such as the integrated teaching team formed by the English, word processing, carpentry, and electrical teachers.

At Haney VoTech, administration provides staff with the funds to support the integration initiative. They provide inservice to maintain the program and have secured materials for the students to use. Administration has been supportive of integration efforts by providing faculty with opportunities to be updated, attend conferences, visit programs, plan, and participate in inservice.

The support for integration at vocational centers is strong and has been strong but does not represent a major change for the vocational center. Instead, the integration of academic and vocational education has been going on for some time now at the vocational centers. There have been no philosophical debates about what the purpose of education is (to teach students skills to get a job or to teach students academic knowledge for the sake of knowledge) at the vocational centers because the mission of the vocational centers is very clear--vocational centers exist to educate **and** train its students for employment. They do so by offering academic skills integrated with vocational skills that are necessary for the student to obtain, keep, and advance in a job.

INSTRUCTIONAL PRACTICES

Elementary Instructional Practices

Middle School Instructional Practices

Secondary Instructional Practices

Vocational Center Instructional Practices

INSTRUCTIONAL PRACTICES

Best practices in instruction range from teachers simply emphasizing the occupational uses of academic content to joint academic/vocational classes being taught by a vocational/academic teaching team. While all instructional practices attempted may not end up being successful, the best programs allow teachers to be risk takers and to experiment as long as minimum standards are being met. Following are instructional practices that have been perceived by the teachers, students, or administrators to be successful.

Elementary Instructional Practices

Making academic education more practical has had a positive impact at the elementary school level. The positive result has been increased student motivation and higher retainment of content. At the elementary schools, students are learning mathematical measuring skills, temperature reading, and language arts skills by preparing foods in cooking labs (and they get to eat the results of their efforts). Students are learning reading, writing and spelling lessons while reading, writing, and publishing books, stories, school newspapers, personal biographies, and reports on computers.

At Dream Lake Elementary students learn math and science concepts by studying about and building rockets. Third graders use legos to learn math concepts. Primary grade curriculum focuses on the surrounding community and an awareness of persons in the community portraying their jobs and careers. In kindergarten and the first grade, parents donate something representative of their careers to the resource center. Lessons are then build around the tool or skill that enhance both skills and career awareness. Parents are invited in to share their occupations with the students. One parent, a secondary agriculture instructor, frequently shares with the students and helps provide agricultural examples for math and science lessons.

At Altamonte Elementary, students spend 30 minutes per week in the computer lab. Computers are interwoven with all academic subjects and students can practice math, art, language arts, and other skills on the computers. Calculators are important tools in the classrooms at Altamonte Elementary. A "buddy" reading and writing system has been developed where older students help younger students read and write stories. This fosters the cooperative effort across grade levels. Altamonte has increased and integrated the use of manipulatives throughout the curriculum. Additionally, career awareness is integrated with the

language arts program. For example, language arts field trips are arranged that also correlate with career themes. A career day has also been implemented at Altamonte Elementary.

Lots of exciting practical activities are occurring at elementary schools that form the foundation for further applied learning. Students exposed to applied learning in the elementary school will be expecting applied learning at the middle school and secondary school level. If vocational content is increasingly integrated with academic content as the curriculum moves up through the grades, by the time the student completes the secondary curriculum, the student should have a solid academic and vocational base.

Middle School Instructional Practices

At Merritt Brown Middle School (which has Project Learning Tree) each of the various disciplines developed activities related to the creation of the school forest. The Agriculture teacher taught forest management, depth of planting, use of the dibble (planting tool), and diseases of pine trees. The math instructor had students measure the area of land and calculate the number of trees to be planted. The history teacher had students research the lumber industry in the southeast. The English department produced a brochure describing the business partnership responsible for the forest (Stone Container with Merritt Brown). The Business instructor had students calculate the cost of the project for Stone Container. The Industrial Arts (Technology Education) instructor had students make identification markers for the forest. The P.E. teacher had the students practice chain measuring by measuring the plots to be planted. All of these activities were part of the total school effort which was to plant the trees and create the forest. The activities at Merritt Brown Middle School provide an excellent example of instructional practices that occurred within various disciplines but yet were all related to one "whole", integrated activity (planting the forest). By all working toward the same goal, the faculty and students were working together. Each activity was a piece of the puzzle that led to the whole.

Additional activities at Merritt Brown Middle School revolved around problems that needed to be solved or (like Project Learning Tree) specific themes. For example, there was a bridge building project. The path from the office to the media center flooded whenever it rained. So an interdisciplinary team made up of the Technology Education (Industrial Arts) teacher and other core teachers provided learning activities to solve the problem. Bridges were studied then a bridge was designed. Materials were selected for the bridge and the bridge was

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constructed. Even English classes were involved as they wrote a story about the troll under the bridge.

In another themed project (this one on fishing), an interdisciplinary team which included Agriculture students developed a retaining pond in the back of the school. The math students figured the number of fish needed per acre to stock the pond, social studies students conducted water testing, and the art students created flyers promoting a fishing tournament.

At Holley-Navarre Middle School in Navarre, instructional practices include using computers to link classes of different disciplines. Computers are used to teach ESE students and for hands on activities including group work. Teachers integrate different disciplines in an effort to show connections among disciplines whenever possible. One example of interdisciplinary teaming occurred between the language arts, social studies and the art teachers and students. The "team" worked together to develop an amusement park blueprint and map. In another interdisciplinary/intergrade project, students created a life size coral reef. These are all instructional practices that occurred in relation to integration model #2.

An example of excellent instructional practices within integration model #1 occurs at Holley-Navarre Middle School with the physical science instructor. This instructor uses aviation to illustrate the concepts of physics. Students create airplanes that fly. In one of the special projects the physical science instructor formed student teams. Each team built and launched rockets. Each team member had a specific role such as safety officer. The students are tested on most projects for content. The testing includes practice testing, practical (hands on) tests, individual tests, paired testing, and group testing. Occasionally, the teacher gives take home exams for projects. Students in the physical science class are required to write two papers on any subject done as a group project. The physical science teacher is constantly communicating with other teachers for ideas on projects and uses some team teaching. For example, a paper written for physical science may also earn the student credit in language arts, social studies or sometimes math.

In another classroom at Holley-Navarre Middle School, students became interested in the environment. Eagles in the Navarre Beach area are almost extinct. However, when eagles were sighted on the Sound side of Navarre Beach, the students mapped and tracked the eagles and located the nest up the East River. Careers protecting the environment such as forestry were tied to this project.

And in another example of a project unique to Holley-Navarre Middle School, students in history and science classes worked with a treasure hunting company to develop a map of ship wrecks in the area. A captain on one of the ships that had several big treasure finds worked with the students. Other interesting instructional activities have had students tracking hurricanes, charting weather, and using Chinese and Arabic numbers to solve problems.

Secondary Instructional Practices

At A.D. Harris Middle and High School, the programs are designed to meet the following goals:

- help students catch up with peers
- provide dual enrollment with modified course requirements to help students complete competencies on individualized schedules
- provide each student with a graduation plan for use as a guidance tool
- prepare the student to enter the workforce upon graduation.

Each team at A.D. Harris has four core members: the lab manager of the WICAT lab, a math teacher, an English teacher, and a work experience teacher. The lab manager provides computer assisted high technology computer remediation for language and math, GED prep, and high school competency test (HSCT) prep. The computers are also used for electives such as economics, American History, and keyboarding. A cooperative plan is developed for each individual student. The coordinators teach the adapted course of Work Experience I or II; or DCT I or II and teach them in a group counseling format. The coordinators have group meetings to address specific employability skills or curriculum competencies as the need arises. In addition to the core teachers, two science and two social studies teachers have one class each and meet with core pod members to discuss student needs, homework problems, and cooperative projects. Teachers in the DCT program are in the process of developing a curriculum for students to be dually enrolled in the community college while enrolled in the alternative program.

Grades 10 to 12 are included in the Work Experience Pod. Team planning, cooperative counseling, and cooperative strategies are the major strategies used in

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the program. Frequent visits to students working in job situations are carried out by the teachers.

The Tech Prep math instructor teaches the applied math curriculum. A lot of cooperative learning strategies are used in the Tech Prep math class. The applied math course is a calculator based class and the instructor has been so successful with the applied math course that the instructor is now using examples from the applied math course to teach other math classes.

At Rutherford High School, math and drafting are paired; health occupations, food sciences and chemistry are paired; there is cooperative planning between chemistry and math; and cooperative and team teaching between applied communications and word processing. Articulation agreements have been in place for students enrolled in the academies at Rutherford to earn dual enrollment credit with Gulf Coast Community College in selected courses. The Journalism Academy has paired with the middle school in the area for several activities. Word processing has become a requirement for all students enrolled in the Tech Prep program.

At Apopka High School, some specific examples of ways teachers have integrated academic and vocational education and examples of teaching teams formed include:

- **Drafting/Math** - The drafting teacher tests all drafting students at the beginning of the year to find out the level of their math proficiency. The drafting teacher then refers all students needing remedial instruction to a particular math teacher who works with them in class or at study sessions after school. The math teacher visits the drafting class to see how math is used in the class and uses examples from that occupation when teaching math concepts.
- **Business/Physics** - The physics teacher had access to computers, but the students did not know how to use word processing software or spreadsheet software. So the physics teacher invited the computer applications teacher to the science classroom for several days to teach students the basics of both software programs. The physics teacher has reported that the lab reports prepared by the students have improved tremendously.
- **English/Word Processing** - These two classes are a natural marriage. Students move as a group from English class to word

processing class. The teachers have common planning time and the students process their English papers in word processing class. The business teacher reinforces the English grammar rules.

- English/All Vocational Areas - For the required writing done in all English classes, teachers have developed generic cover sheets so that students who write papers for their vocational classes may also submit them for English credit. Teachers have adopted a school-wide format for research papers. English teachers are allowing students to do a career research paper in lieu of the traditional topics.
- Health/Chemistry - The chemistry teacher visited the health occupations classes when they were doing a unit on "Generic Drugs vs. Brand Name Drugs". In a short skit, the chemistry teacher and the health occupations teacher played the parts of a pharmacist and a consumer and discussed a number of drugs during the role playing exercise. In the chemistry class, the students rated the effectiveness of various sunscreens in their labs. Then they presented the experiment to the health occupations class and shared their results.
- Auto Mechanics/English - Following a unit on safety, students worked in cooperative groups to compose a letter identifying safety violations in a shop and how they could be corrected. English teachers assisted with the grading and some students received extra credit in the English class for this activity.
- Marketing/English - Marketing students published a newspaper magazine which was inserted in the community's weekly newspaper. English teachers worked closely with students helping them with editing their articles.
- Social Studies/Health - Law students studying about the laws affecting the disabled decided to become disabled for the day in order to have a better appreciation of their problems. They called upon a health occupations class to provide them with "disabilities." Health occupations students wore their uniforms, bandaged and/or provided students with crutches, walkers, or wheelchairs. It was a great recruiting tool for the health occupations class.

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At Apopka High School, some themes that schoolwide projects have been based upon include technology, consumerism, volunteerism, and careers.

Palm Beach Gardens High School has formed "focus groups" made up of interdisciplinary groups of teachers. Each group creates, develops and implements special projects. Some of the projects are one time only and some have become regular yearly events. Some projects are for specific groups of students, other projects are schoolwide. Career Shadowing Day was the result of one such focus group. Student from all disciplines go out and shadow someone in an occupation that they are interested in for one day.

Other instructional practices at Palm Beach Gardens High School include making academic courses more applied and eliminating the general track academic course. Applied Math, Principles of Technology, Applied English, and Applied Communications are now offered in place of general academic courses. These courses use purchased packaged materials to provide real world examples of academic concepts.

At Osceola High School, the journalism, marketing, and computer applications classes worked together to create a school newspaper. The English and computer applications teachers worked together to create publications for young children and senior citizens. The Applied Communications class (10th grade) and Computer Applications class adopted a fourth grade classroom at the elementary school. They produced a newsletter to send to the fourth graders and made visits to help the fourth graders write letters and do other writing assignments. A U.S. History teacher had students research and write about the first World War. They then joined with a computer applications class to produce a newsletter dated 1917. It was an excellent compilation of articles about the history of W.W.I. and a good use of integrated efforts.

At Pensacola High School, an English teacher teaching *Julius Caesar* teamed with a history teacher who taught the history of the Roman Government at the same time.

All of the instructional practices mentioned were created and tried out by teachers and administrators who were willing to take risks to try innovative new teaching methods. The instructional practices mentioned are but a few of the many being used throughout Florida. Every new instructional practice tried will not be successful. Some ideas may not work well or even fail. But most of the time they do work. And when they do, everyone wins. The teachers win. The

administrators win. The business and industry community wins. And most of all, the students win.

Vocational Center Instructional Practices

The postsecondary vocational centers seem to have gone a step beyond the instructional practices described thus far. That is, they integrate not only within the school but they also work closely with teachers and students at other schools and other school levels. At Locklin Adult Vocational-Technical Center, the vocational faculty and the adult high school faculty view themselves as one family. Cooperative teamwork has never been felt to be an unusual or novel instructional practice. They have constant teamwork, team planning, and guidance. The applied math courses at Locklin are exploratory math courses. The laboratory activities for the applied math courses are completed in vocational settings. They are coupled with projects from vocational classes and after the activity, the math concepts are followed up on paper in the form of a report. This brings together the math, vocational, and English teachers. At Locklin, the English and word processing programs are teamed with the carpentry and electrical programs. The students design bid and proposal forms in the English classes and produce them in the word processing classes for use by the carpentry and electrical program students.

An example where integration and teambuilding activities cross over school boundaries outside of Locklin is a project to build houses. The CAD (drafting) instructor from the high school in the area has the students design houses. The high school drafting teacher then selects up to four sets of plans to send to Locklin. At Locklin, one plan is selected and all of the vocational students work together to build the house.

Locklin has many students who transfer from day to night classes. To eliminate any confusion over what interdisciplinary project the student is working on, each teacher is provided a copy of the plans of all interdisciplinary projects. Academic teachers at Locklin use vocational skills taught in the vocational programs to show the relevancy of academic skills taught. Implementation of the Blueprint and coordination across school levels has helped to promote vocational education throughout the district. Other activities related to instruction have included faculty attendance at conferences, coordination of inservice activities, having teachers involved in Blueprint activities present at conferences, and training the teachers to train each other.

Integrating Academic and Vocational Education

At Haney VoTech, instructional practices include applying academic instruction to horticulture. Close collaboration between vocational teachers and staff of the System for Applied Individualized Learning (SAIL) Laboratory is provided. For example, the electronics program instructors and the SAIL lab staff work cooperatively to identify areas of math that are not included in the Test of Adult Basic Education (TABE). A special test is written for students enrolled in the electronics program that includes the areas not included in the TABE as well as basic scientific notation and English notation. If students do not do well, remediation is provided. The test is reviewed and updated frequently by the electronics instructors and SAIL coordinator.

The drafting instructor at Haney provides inservice and support on CAD systems for high school teachers. The drafting teacher feels that the students are benefitting from this relationship because they are coming into the drafting program from the high school better prepared. The Automotive instructor at Haney has completed additional studies in general education classes in the areas of algebra, basic physics, and chemistry and applies the concepts of these disciplines with examples in the automotive field in an applied fashion. The automotive mechanics instructor has also assisted the Merritt Brown Middle School science instructor in developing lesson plans using automotive repair activities to teach science concepts.

At Washington Holmes Area Vocational-Technical Center (WHAUTC), computer technology is integrated with all programs to reinforce learning. The vocational programs use integration strategies to improve learning. Instructors can send students to the computer lab to gain computer skills not taught by the instructor but necessary for the skill. For example, students use a mouse extensively in drafting. But the drafting instructor does not teach mouse skills. So students can get specialized instruction on using a mouse in the computer lab and the drafting instructor can teach the student CAD use. At WHAUTC, many of the projects undertaken as integration activities are live work projects. WHAUTC does work regularly for churches and non-profit organizations. Students in the tenth grade from all high schools in the area of WHAUTC take tours of the facility and can come back to spend the day if they so choose. This way they are exposed to vocational training and education to help them select high school courses relative to what occupational area they eventually would like to enter.

INSTRUCTIONAL MATERIALS

Materials in Elementary Schools

**Materials in Middle, Secondary and
Postsecondary Schools**

INSTRUCTIONAL MATERIALS

Just as the models and instructional practices for integrating academic and vocational education take many forms, the instructional materials available for integration activities and programs take many forms. There are packaged curriculum materials for use in applied academic courses developed by such agencies as the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology (AIT). Of the schools using packaged materials, most found the materials to be excellent in promoting an integrated curriculum. The only problem found with packaged materials was the cost to purchase the materials. Schools that were part of the SREB model school program or are a Blueprint site have funds that can be used to purchase materials such as the CORD materials. But schools that are not part of any initiative are finding it difficult to find the funds to purchase the packaged materials and are having to find more creative ways of obtaining materials or developing their own. It should be noted here that CORD/AIT materials were developed through consortia efforts and are, therefore, state "owned." Any local educational agency in the state can borrow the print and video masters from the State SREB/Blueprint Coordinator's office for duplication. It is important to remember that the duplication must be from the state masters and not just from a set of purchased materials. This makes the Applied curriculum affordable to all districts.

Materials in Elementary Schools

Because of the age level of elementary school students and the level of integration taking place at the elementary schools, it is often easier to obtain instructional materials to aid in integration activities. Every day household items can be used in creative new ways to teach a concept or principle. For example, math manipulatives can be blocks, coins, buttons, or even candy such as M&Ms. At Altamonte Elementary School, no special instructional materials were purchased other than calculators for the classrooms. Standard adopted materials are used and then teachers expand these materials by adding everyday household items. Altamonte did purchase *Insights* modules for self and career awareness that contain over eighty career development activities for grades K-5. But information provided to the faculty of Altamonte suggests that *Insights* materials are

to be used in conjunction with other classroom activities. A handout on using the program states:

Insights facilitates the infusion of existing academic subject areas. It is not intended to be a separate, isolated program. An educational/vocational development activity may, for example, be taught in connection with Language Arts or Math; a self-knowledge activity through Social Studies or Science; and a career exploration activity in conjunction with Health or Physical Education.

The *Insights* materials are to be used integrated with other curriculum but do not contain specific manipulatives. The specific lab equipment that Altamonte uses must still be collected or purchased by the school.

Like Altamonte Elementary, Dream Lake Elementary purchased no specific packages or materials to facilitate the integration of academic and vocational education. Teachers at Dream Lake Elementary make use of whatever materials they can obtain. The third grade math program uses Legos as manipulatives. An agriculture teacher from the middle school in the area shares some items with the Dream Lake Elementary such as seeds, soil, etc.

Materials in Middle, Secondary and Postsecondary Schools

Secondary schools are not only finding creative ways of purchasing materials but are also creating innovative uses for materials that would not ordinarily be used as instructional materials (much in the same way that the elementary schools are doing). Instructional materials at A.D. Harris Middle and High School include calculators, WICAT equipment, software and packaged materials for the applied communications curriculum, and CORD materials for the applied math curriculum.

At Merritt Brown Middle School many traditional materials such as books are used. They are just used in new ways. For example, Project Learning Tree used numerous books (all easily available), pine trees and agricultural materials purchased with the help of business partners.

Integrating Academic and Vocational Education

At Holley-Navarre Middle School, instructional materials include *Interact* simulations (complete packages, user friendly, \$20-50 each) for social studies; other computer software used for a variety of interdisciplinary activities; and chemical supplies for laboratory experiments.

At Apopka High School, attendance at a SREB conference was followed up with five academic and five vocational teachers participating in curriculum writing teams for one full week for two summers. Funded by the district, this enabled teachers to come up with many ideas and ways to integrate without having to resort to commercially prepared materials. Some of the instructional materials developed at Apopka are for two teachers to use together while others are for entire teams. One example of "teacher made" instructional materials is the cover sheets designed by the English teachers and used when assigning essays to allow students to obtain credit for writing done in their vocational classes.

Rutherford High School is using CORD materials and PACE materials from North Carolina. At Marianna High School, the applied communication and applied math programs are also using CORD/AIT materials. The applied technology program is using commercially prepared D.C. Jaeger materials. Some programs at Marianna have enhanced the AIT materials by using real life examples to illustrate concepts. Guest speakers are invited in to share with students. The Wall Street Journal is used as an instructional material across the curriculum from psychology to math. And every day items are also used. For example, a lesson used the soft drinks Pepsi and Coke for taste test comparisons.

Vernon High School has purchased several packaged materials. The video package *The Futures Series* by PBS is used to show math applications in vocational fields. These are supplemented by hands-on materials such as those used in the design and construction industry. The CORD materials are also used for the applied academics courses. Textbooks are still used though they are supplemented with hands-on activities using whatever materials can be found or purchased. Vernon High School relies heavily on advisory committees to assist in obtaining materials.

At Palm Beach Gardens High School, several packaged instructional materials were purchased. The Principles of Technology program uses a package called *Energy Concepts* that contains all materials as well as lab books needed. The Applied Math program uses CORD materials. The

Discover and *Choice* career education packages were purchased for student use. And the district helped by putting remediation labs in the vocational wings and then placing a remediation software package that it had a license for on the network. Palm Beach Gardens is not using AIT materials for the Applied English program but has pulled together curriculum and materials from many sources for this program. The focus groups at Palm Beach Gardens develop their own curriculum for the projects they create and then obtain the materials needed to carry out the project. The administration is supportive of focus group efforts and often tries to purchase whatever supplies the focus groups need. Palm Beach Gardens has also worked hard to get integrated materials such as books placed on the state adoption list so they can be purchased with regular allotted funds.

At Haney VoTech, the curriculum specialist for the System for Applied Individualized Learning (SAIL) Lab works cooperatively with vocational teachers in the traditional industrial areas to assist them in developing modules. Over 67 modules have been developed for vocational subject areas that integrate language, reading, math, and study skills. An important instructional tool at Haney is the individualized educational plan developed for each student by the vocational teacher in conjunction with the other members of the staffing group.

Washington Holmes Area Vocational-Technical Center uses CORD materials. Almost every program uses some sort of package that was purchased. Software packages such as Word Perfect 5.1, Lotus 1-2-3, and dBase III Plus are commonly used throughout the school in all disciplines.

At Locklin Area VoTech Center, Technology Learning Activities (TLAs) are used extensively for interdisciplinary planning and implementation. An area where a need has been identified is the area of developing interdisciplinary TLAs for adults. Locklin has identified the lack of time as the biggest problem in curriculum development and instructional material development.

The CORD/AIT materials are used in many schools for teaching the applied academic courses. But some schools use interdisciplinary teams to develop curriculum and then rely upon business partners or advisory committees to provide the supplies needed. Or they find interesting uses for easily available materials and supplies. Packaged materials were

reported to be clean and compact and the teacher could rest assured that all the materials necessary to complete the lesson were included. But despite the fact that less teacher planning time is necessary when using packaged material, many teachers reported that the students were bored. Teachers also reported that some packaged materials often did not specifically relate to the lesson at hand, or in one case, was too complicated to use.

The schools that developed their own curriculum and then either purchased or created their own instructional lab materials seemed to be happier with the results. Perhaps this is because they had "ownership" of the curriculum and materials. Many academic teachers were surprised at the lab materials and resources available to them in their own schools just down the hall in the vocational classes. For example, science teachers who needed tools, lab materials, or even real world applications for academic principles they were trying to teach often only had to look in a vocational classroom to find exactly what they needed. To a certain extent, there is no need to build a better mousetrap or to purchase pre-packaged, commercially prepared instructional materials. Schools only need to more efficiently use the "mousetraps" they have or to explore the vocational programs found at their own schools.

Guidance and Support Service

Services in Elementary Schools

Services in Middle Schools

Services in Secondary and Postsecondary Schools

Guidance and Support Service

A major key to the successful integration of academic and vocational education is guidance and support services. Integration involves the elimination of dual tracks in schools and the joining of the academic concepts with real world applications of those concepts. To do this requires guidance to play a large role in the elimination of dual tracks. In the schools where the only form of integration is the applied academic courses, students must know about the courses. And the schools where integration takes the form of occupational clusters, teams or academies, students' interests and abilities must be matched so that the students benefit from the program. Support services such as parents, the community, and business and industry are also important parts in the success of integration efforts. What roles have guidance and support services played in the schools that have the most successful practices in integration?

Services in Elementary Schools

In the elementary schools, guidance is involved in the career awareness programs. At Dream Lake Elementary, the guidance counselor goes to each classroom once every month to do a career awareness activity. The curriculum resource teacher works closely with the community to identify resources for career awareness (paramedics, police workers, fire department employees, etc.). The PTA at Dream Lake Elementary has been very supportive providing dollars to purchase supplies and in some cases, supplying the actual materials used in the applied learning activities.

At Altamonte Elementary, guidance has been instrumental in the implementation of *Insights*, the self and career awareness program for K-5. Parents are involved in many supplemental programs at Altamonte such as Altamonte Discovers, Creative Expressions, Publishing Lab, Altamonte Anthology, Cultural Fair, and other extracurricular activities. And parents, teachers and local university staff have a large role at Altamonte Elementary in researching, monitoring, developing, and evaluating the success of the integration efforts.

Services in Middle Schools

Many middle schools and junior high schools have implemented the exploratory wheel curriculum whereby students are exposed to a multitude of occupational areas in preparation for the selection of a more focused high school program of

study. Guidance plays a large role in the middle schools testing students and helping students determine their own interests in order to help them develop this program of study. Most students entering high school enter with some sort of a four-year plan or program of study that was developed in eighth grade with the help of the guidance counselor.

At Merritt Brown Middle School, guidance plays a large role in bringing the projects to closure. For example, a Career Day dedicated to careers in forest related careers was held by guidance as part of Project Learning Tree. All businesses and industries dealing with timber and forest productions were invited to attend the Career Day. All students were then given the opportunity to speak to someone about possible careers or were given information about the careers.

In addition to the guidance staff, the businesses and industries who give presentations, supply materials, or fund projects are invaluable support services that help to keep Merritt Brown Middle School an exemplary school that integrates academic and vocational education.

At Milwee Middle School, business and community resources are involved through business partnerships, Junior Achievement, Optimists Club, Steering Committees, and Technology planning teams.

At Holley-Navarre Middle School, guidance personnel help eighth graders create a planner to be used as a program of study guide.

Services in Secondary and Postsecondary Schools

Many secondary schools are implementing Teachers as Advisors (TA) programs. At Apopka High School, through Teachers as Advisors staff development, all teachers in the school have been informed of programs available for students who need hands-on instruction and who will benefit from programs that integrate academic and vocational education. Guidance staff members are advocates of the integration efforts at Apopka High School and are instrumental in recruiting students for the programs. Apopka High School is implementing the use of *Pathways to the Future* at the eighth grade feeder schools to help identify areas of interest for each incoming ninth grader. Apopka feels it will be able to better guide the students with the use of printed programs of study.

At Rutherford High School, guidance of students is continually being evaluated by the occupational specialist. The Rutherford guidance department is developing

a guidance handbook for Tech Prep for eighth grade registration. Representatives from Rutherford provide incoming students with an overview of the programs available at Rutherford and hand out brochures. Guidance also keeps teachers informed of new programs and innovative integration efforts.

At Vernon High School, guidance helps eighth graders develop a four year program of study. Guidance also provides financial aid for students and staffs the Learning Resource Center where adult education teachers assist in teaching basic skills.

At Marianna High School, the Occupational Specialist has created a career center that is located in the center of the school. A four-year planner developed at the middle schools is used for career guidance and planning. Teachers as advisors help in advising and registering students. The occupational specialist also is actively involved in the identification of student interests and personalities. For example, the occupational specialist administers the *Myers Briggs* and *Choices Jr.* surveys. Additionally, the occupational specialist organizes career shadows, teaches job interviewing skills, and loans out computers for student use.

At Palm Beach Gardens High School, guidance staff play a large role in the successful implementation of integrated efforts. Students are surveyed using *Discovery Jr.* and *Choices Jr.* at the feeder middle schools. A four-year plan is then developed. Eleventh graders at Palm Beach Gardens High School are given the Armed Service Vocational Aptitude Battery (ASVAB) which is then interpreted by a non-military person who relates the information to civilian occupations.

In the fall, guest speakers are invited into the classroom at Palm Beach Gardens High School during a "Business Education Day." In the spring, a Job Shadowing Day is held where 50 to 80 students participate. Palm Beach Gardens has an extensive 4 + 2 + 2 articulation program whereby students can begin a vocational program in the secondary school, and obtain a high school diploma as well as valuable job skills. Then the student can move on to a community college for further vocational training and at the same time earn an Associate degree. If the student so chooses, the Associate degree meets all requirements for general education at a state university. So the student is working towards vocational and academic education at the same time.

At Osceola High School, the occupational specialists have been great inspirations for the teachers. Guidance has a large impact on students who are taking the Tech

Prep courses. The staff of the career center see each student at the school in English class to talk about careers and to discuss with the students their high school class choices, postsecondary training choices, and provide financial aid information. Guidance coordinates the availability and delivery of career information and work closely with the students and military recruiters.

At Hillsborough High School, guidance was instrumental in assuring that classes in different disciplines were offered at various times throughout the day to minimize conflicts in scheduling classes. At Haney VoTech Center, guidance provides one to one counseling for all students involved in the varying exceptionalities program. They encourage these students to explore vocational and applied academic courses. The staff of the System for Applied Individualized Learning (SAIL) Lab provides help and encourages adult basic education faculty to implement projects in the lab. The SAIL lab staff also maintain open communications with the vocational counselors and provide opportunities for counseling of adult basic education students.

At Locklin Vocational-Technical Center, program advisory committees help to validate integration activities. Guidance coordinates the career shadowing for all students in the district. Guidance activities also serve to provide good public relations services for the school. Eighth graders explore vocational education programs at Locklin once per year through tours. An eighth grade planner and related activities are also used. Middle schools and elementary schools work very closely with Locklin to create an atmosphere of unity and to assure a smooth transition for the students. A career fair is held for sophomores attending Locklin. All faculty and students at Locklin are provided information about careers and occupational education available at Locklin. The *I Can* self-motivation program is used to build self esteem in the System for Applied Individualized Learning (SAIL) Lab. Teenage parenting classes are provided for vocational and academic students.

At Washington Holmes Area Vocational Technical Center, guidance administers the Test of Adult Basic Education (TABE) tests and IBM logic tests. Guidance also finds financial aid for students, provides information on the single parent program, and provides monthly seminars for faculty and students in coping skills. At WHAVTC, the community is instrumental in providing support services for the school. They participate in many ways from providing guest speakers to funding projects and forming business partners.

Summary and Conclusions

Summary and Conclusions

The interviews and research that went into this document revealed that many exciting integration activities are taking place in Florida schools. The best models for integrating academic and vocational education are in schools using a multiple model approach. The more integration models used, the more students reached by the integration efforts.

Administration at the schools with the most successful integration programs and activities had several common characteristics. First they supported and believed in the efforts. Second, they promoted risk taking behavior in the faculty and staff. Third, they created an atmosphere that encouraged teachers to try new and innovative ideas and instructional practices. They also encouraged and provided means for the faculty to attend workshops, to attend training sessions, and to visit other schools. Finally, they encouraged cooperation and teamwork.

Instructional practices at schools implementing successful integration activities had one thing in common. They all were creative, innovative and exciting, and they captured the natural curiosity of students. Previous research has shown and this research seems to agree with the findings that integration activities provide vocational students with more basic academic skills and at the same time, make basic academic skills more relevant to the real world. Good preservice and inservice training for teachers is needed to give teachers ideas about how to proceed with integration but more than anything, teachers need to feel free to try out new practices.

Inservice training has been provided for teachers throughout the state. Successful practices and materials have been spotlighted and shared during these workshops. It is important to continue these efforts. It is equally important to prepare preservice teachers with the skills to work in integrated curriculum settings. Preservice academic and vocational teacher education programs must teach preservice teachers how to integrate academic and vocational education by content, activities, and *examples*. Then, curricular integration will be the norm, rather than the innovative exception.

This research revealed that best instructional materials does not necessarily mean purchased pre-packaged instructional materials. While packaged instructional materials such as that developed by CORD/AIT have been reported to be excellent, some of the best instructional materials were everyday, common

materials used in new and innovative ways. For curriculum, innovative and creative teachers working in teams brainstorming and just getting academic and vocational teachers talking together seemed to produce plenty of ideas of how to illustrate academic principles. And for the actual lab materials, many times they were already in use in the vocational classroom. All the academic teacher needed to do was to meet with the vocational teacher and tie the academic lesson into the vocational lesson.

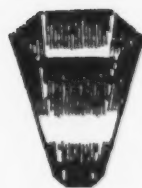
Guidance staff plays an important role in integration efforts. Students must know about the programs and more importantly, must be carefully screened for interests and aptitudes so that they can make informed choices in course selection and occupational selection. Other support structures and staff such as the community, business and industry, and parents are the final elements to successful integration programs. These support groups can often fill in when funds, ideas, or manpower run short to help make the integration efforts successful.

In conclusion, this document is only a beginning. It is an attempt to describe some of the best practices occurring in Florida relative to efforts to integrate academic and vocational education. Many more exciting and innovative efforts are underway that have not been mentioned here. This document is by no means meant to be inclusive of all of the best efforts in Florida. The schools described herein are integrating academic and vocational education and are doing it successfully. If a teacher, teaching team, school, or district were to model themselves after any of the schools mentioned in this document, they will be well on their way to a good start in integrating academic and vocational education.

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